

1 1. An expandable well screen, comprising:
2 a filtering media, the filtering media stretching circumferentially when the
3 well screen is radially outwardly expanded.

1 2. The well screen according to Claim 1, wherein the filtering media
2 comprises an elongated strip disposed in a helical configuration.

1 3. The well screen according to Claim 1, wherein the filtering media
2 includes a layer of relatively fine filtering material sandwiched between layers of
3 relatively coarse filtering material.

1 4. The well screen according to Claim 3, wherein the relatively fine
2 filtering material is a sintered woven filtering material.

1 5. The well screen according to Claim 1, wherein the filtering media is
2 generally tubular and has multiple slots formed therethrough.

1 6. The well screen according to Claim 5, wherein the slots are arranged
2 helically relative to a longitudinal axis of the filtering media.

1 7. The well screen according to Claim 1, wherein the filtering media filters
2 particles having a size of greater than 500 μ m when the well screen is radially
3 outwardly expanded.

1 8. The well screen according to Claim 1, wherein openings through the
2 filtering media for fluid flow therethrough change size by less than fifty percent
3 when the well screen is radially outwardly expanded.

1 9. An expandable well screen, comprising:

2 a generally tubular base pipe having a longitudinal axis and a series of
3 spaced apart rows of holes formed through a sidewall of the base pipe, the holes
4 of each row interconnecting with each other when the base pipe is expanded
5 radially outward; and

6 a filtering media configured for filtering fluid flowing through the base
7 pipe holes.

1 10. The expandable well screen according to Claim 9, wherein the series of
2 rows of holes is arranged helically on the base pipe relative to the longitudinal
3 axis.

1 11. The expandable well screen according to Claim 9, wherein the holes in
2 each row are distributed along a line.

1 12. The expandable well screen according to Claim 9, further comprising a
2 generally tubular protective shroud outwardly overlying the filtering media.

1 13. The expandable well screen according to Claim 12, wherein the shroud
2 includes a recess formed internally thereon, the recess permitting transverse fluid

3 flow between the shroud and the filtering media when the filtering media is
4 compressed against the shroud.

1 14. The expandable well screen according to Claim 9, wherein the filtering
2 media includes a layer of relatively fine filtering material sandwiched between
3 layers of relatively coarse filtering material.

1 15. The expandable well screen according to Claim 14, wherein the
2 relatively fine filtering material is a sintered woven filtering material.

1 16. The expandable well screen according to Claim 9, wherein the filtering
2 media includes a woven material having strands thereof which are arranged
3 helically relative to the base pipe longitudinal axis.

1 17. The expandable well screen according to Claim 9, wherein the base
2 pipe includes a recess externally formed thereon, the recess permitting transverse
3 fluid flow between the base pipe and the filtering media when the filtering media
4 is compressed against the base pipe.

1 18. An expandable well screen, comprising:

2 a generally tubular base pipe having a longitudinal axis and a series of
3 holes formed through a sidewall of the base pipe, the holes being distributed
4 helically relative to the base pipe longitudinal axis, and each of the holes being
5 compressed in a direction of the base pipe longitudinal axis when the base pipe is
6 expanded radially outward; and

7 a filtering media disposed externally on the base pipe.

1 19. The expandable well screen according to Claim 18, further comprising

2 a generally tubular protective shroud outwardly overlying the filtering media.

1 20. The expandable well screen according to Claim 18, wherein the

2 filtering media includes a layer of relatively fine filtering material sandwiched
3 between layers of relatively coarse filtering material.

1 21. The expandable well screen according to Claim 20, wherein the

2 relatively fine filtering material is a sintered woven filtering material.

1 22. The expandable well screen according to Claim 18, wherein the

2 filtering media includes a woven material having strands thereof which are
3 arranged helically relative to the base pipe longitudinal axis.

1 23. An expandable well screen, comprising:
2 an elongated strip of filtering media wrapped helically about a longitudinal
3 axis.

1 24. The expandable well screen according to Claim 23, wherein the
2 filtering media includes a woven material with strands thereof oriented helically
3 relative to the longitudinal axis.

1 25. The expandable well screen according to Claim 23, wherein the
2 filtering media is disposed in multiple wraps.

1 26. The expandable well screen according to Claim 25, wherein each wrap
2 of the filtering media is attached to an adjacent wrap of the filtering media at a
3 connection therebetween, the connection extending helically relative to the
4 longitudinal axis.

1 27. The expandable well screen according to Claim 26, wherein the
2 connection between the filtering media wraps comprises a welded seam between
3 the wraps.

1 28. The expandable well screen according to Claim 26, wherein the
2 connection between the filtering media wraps comprises a connector positioned
3 between the filtering media wraps.

1 29. The expandable well screen according to Claim 28, further comprising
2 a communication line positioned adjacent the connector and extending helically
3 relative to the longitudinal axis.

1 30. The expandable well screen according to Claim 28, further comprising
2 a power line positioned adjacent the connector and extending helically relative to
3 the longitudinal axis.

1 31. The well screen according to Claim 28, further comprising a hydraulic
2 line positioned adjacent the connector and extending helically relative to the
3 longitudinal axis.

1 32. The well screen according to Claim 23, wherein the filtering media
2 includes a layer of relatively fine filtering material sandwiched between layers of
3 relatively coarse filtering material.

1 33. The expandable well screen according to Claim 32, wherein the
2 relatively fine filtering material is a sintered woven filtering material.

1 34. An expandable well screen, comprising:

2 multiple elongated strips of filtering media spaced apart and distributed
3 circumferentially about a longitudinal axis and extending parallel to the
4 longitudinal axis; and

5 multiple elongated expansion strips, one of the expansion strips being
6 interconnected between each adjacent pair of the filtering media strips, and the
7 expansion strips lengthening circumferentially to thereby increase
8 circumferential separation between the filtering media strips.

1 35. The expandable well screen according to Claim 34, wherein the
2 expansion strips have longitudinal corrugations formed thereon, and wherein the
3 corrugations are at least partially straightened when the expansion strips
4 lengthen circumferentially.

1 36. The expandable well screen according to Claim 34, wherein the
2 filtering media includes a layer of relatively fine filtering material sandwiched
3 between layers of relatively coarse filtering material.

1 37. The expandable well screen according to Claim 36, wherein the
2 relatively fine filtering material is a sintered woven filtering material.

1 38. The expandable well screen according to Claim 34, further comprising
2 multiple elongated protective shroud strips, one of the shroud strips outwardly
3 overlying each of the filtering media strips.

1 39. The expandable well screen according to Claim 38, wherein each of
2 the shroud strips is interconnected between two of the expansion strips.

1 40. The expandable well screen according to Claim 34, further comprising
2 at least one retaining member securing at least one of the expansion strips in a
3 compressed configuration thereof, the retaining member releasing the at least
4 one expansion strip for expansion thereof when the expansion strips lengthen
5 circumferentially.

1 41. The expandable well screen according to Claim 40, further comprising
2 multiple elongated protective shroud strips, one of the shroud strips outwardly
3 overlying each of the filtering media strips, and the retaining member being
4 connected to two of the shroud strips.

1 42. The expandable well screen according to Claim 40, wherein the
2 retaining member is connected across at least one of the expansion strips.

1 43. The expandable well screen according to Claim 42, wherein the
2 retaining member is attached directly to the at least one expansion strip.

1 44. The expandable well screen according to Claim 40, wherein the
2 retaining member extends externally across a longitudinally extending fold
3 formed in a base pipe.

1 45. The expandable well screen according to Claim 40, wherein the
2 retaining member extends externally across a longitudinally extending
3 undulation in a base pipe.

1 46. The expandable well screen according to Claim 34, further comprising
2 a base pipe deformed to a radially reduced configuration thereof.

1 47. The expandable well screen according to Claim 46, wherein the base
2 pipe has an hourglass cross-sectional shape.

1 48. An expandable well screen, comprising:

2 a generally tubular filtering media, the filtering media including expansion
3 portions thereof permitting circumferential lengthening of the filtering media.

1 49. The expandable well screen according to Claim 48, wherein the
2 filtering media expansion portions comprise longitudinally extending
3 corrugations formed on the filtering media.

1 50. The expandable well screen according to Claim 48, further comprising
2 a series of longitudinally extending and circumferentially distributed ribs
3 positioned at least partially within the filtering media.

1 51. The expandable well screen according to Claim 50, wherein at least
2 one of the ribs is positioned radially between a base pipe and one of the filtering
3 media expansion portions.

1 52. The expandable well screen according to Claim 48, further comprising
2 at least one substantially hollow longitudinally extending rib internally
3 positioned relative to the filtering media.

1 53. The expandable well screen according to Claim 52, further comprising
2 a communication line extending through the rib.

1 54. The expandable well screen according to Claim 52, further comprising
2 a power line extending through the rib.

1 55. The expandable well screen according to Claim 52, further comprising
2 a hydraulic line extending through the rib.

1 56. The expandable well screen according to Claim 48, wherein the
2 filtering media includes a series of circumferentially extending slots formed
3 therethrough.

1 57. The expandable well screen according to Claim 56, wherein the series
2 of slots is helically arranged on the filtering media.

1 58. The expandable well screen according to Claim 56, wherein a width of
2 each of the slots decreases when the filtering media is radially outwardly
3 expanded.

1 59. An expandable well screen, comprising:
2 a filtering media;
3 a series of longitudinally extending and circumferentially distributed ribs
4 disposed externally relative to the filtering media; and
5 a generally tubular protective shroud outwardly overlying the ribs.

1 60. The expandable well screen according to Claim 59, further comprising
2 an expansion strip connected to opposite circumferential ends of the filtering
3 media, the expansion strip elongating circumferentially when the filtering media
4 is radially outwardly expanded.

1 61. The expandable well screen according to Claim 60, wherein the
2 expansion strip includes longitudinal corrugations formed thereon.

1 62. The expandable well screen according to Claim 59, wherein the
2 filtering media includes longitudinal corrugations formed thereon, the
3 corrugations at least partially straightening when the filtering media is radially
4 outwardly expanded.

1 63. The expandable well screen according to Claim 59, wherein the
2 filtering media includes a woven sintered filtering material.

1 64. The expandable well screen according to Claim 63, wherein the
2 filtering media includes at least two layers of the woven sintered filtering
3 material.